

FEX L.P.

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February 8, 2007

Mr. Ken Hollingshead
National Marine Fisheries Service
Office of Protected Resources
1315 East West Hwy
Silver Springs, MD 20910-3282


**RE: Application for an Incidental Harassment Authorization for FEX L.P.'s 2007
Barging Operations in the Beaufort Sea, Alaska**

Dear Mr. Hollingshead:

FEX L.P. proposes to conduct resupply barging operations in the Beaufort Sea open-water period as part of their exploratory drilling operations in the National Petroleum Reserve, and hereby submits an Incidental Harassment Authorization application for the 2007 program. This IHA application represents an updated resubmittal of a previous IHA application (subsequently granted) covering the 2005 and 2006 barging seasons. FEX L.P. enlisted the support of Mr. Glenn Ruckhaus with Arcadis and Mr. Greg Green with Tetra Tech to prepare the operational and biological portions of this application, which includes information from the 2005 and 2006 marine mammal monitoring programs managed by Mr. Green.

If you have any questions or require additional information, please contact Mr. Glenn Ruckhaus at (907)-277-3774 or me at the number or address listed below.

Sincerely,



Paul Mazzolini
FEX L.P.
(907) 771-1923 office

Enclosure

cc: Brad Smith - NMFS

Application for Incidental Harassment Authorization for Marine Near-Shore Logistics Barging Operations Beaufort Sea, Alaska

Submitted by FEX L.P.

FEX L.P. (FEX) used the following guidance to prepare its request for an Incidental Harassment Authorization (IHA). This information has been obtained via outreach efforts with the Alaska Eskimo Whaling Commission (AEWC), Whaling Captains ASSOCIATIONS, and other Native subsistence entities. FEX is engaged with the AEWC to obtain a Conflict Avoidance Agreement (CAA).

50 CFR 216.104 Submission of Requests.

(a) In order for the National Marine Fisheries Service (NMFS) to consider authorizing the taking by U.S. citizens of small numbers of marine mammals incidental to a specified activity (other than commercial fishing), or to make a finding that an incidental take is unlikely to occur, a written request must be submitted to the Assistant Administrator. All requests must include the following information for their activity:

1. A detailed description of the specific activity or class of activities that can be expected to result in incidental taking of marine mammals:

FEX is proposing to use marine barge transit to either resupply or demobilize from their ongoing drilling activities on the Northwest National Petroleum Reserve-Alaska (NPR-A) Oil and Gas Leases. For a resupply operation, consumables, fuel, and essential pad construction equipment would be marine lifted from West Dock (Prudhoe Bay) to the Cape Simpson operational staging area (Figure 1), where it will be stored in preparation of the 2007-2008 winter exploration season. During the 2006 barging resupply operation, two Bowhead flexi-float barges (Stryker and Garrett) made 15 round trips between West Dock and Cape Simpson, and are probably indicative of the level of barging effort expected for a 2007 re-supply operation. However, the demobilization operation would probably require effort similar to the 2006 mobilization that also involved continuous use of the Stryker and Garrett during the open water season. The 2005 mobilization involved 30 round trips. Either scenario will require the occasional use of larger Crowley Marine barges (e.g., Kavik River or Sag River). As in 2005 and 2006, some side operations to Point Lonely may be required to collect equipment stored there.

2. The date(s) and duration of such activity and the specific geographical region where activity will occur:

Barge traffic between West Dock and Cape Simpson or Pt. Lonely (Beaufort Sea) is scheduled to occur during the 2007 open-water season. The distance between West Dock and Cape Simpson is approximately 240 km. Typically the open-water season begins mid- to late July, although the travel lane was not free of ice until the first week of

August in 2005 and 2006. Every effort will be made to complete the barging activities prior to August 15, but no later than September 1, 2006. A late season barge effort after the annual bowhead whale hunt (late September/early October) and before freezeup (late October/early November) may occur if necessary and will be addressed in the CAA. The 2007 open-water marine component will be complete after the supplies are stored at Cape Simpson in the case of a resupply, or moved back to West Dock or Pt. Lonely in the case of demobilization.

3. The species and numbers of marine mammals likely to be found within the activity area:

The species and numbers of marine mammals likely to be found within the Eastern Beaufort Sea activity areas are listed in Table 4-1.

A total of 3 cetacean species (bowhead, gray, and beluga whale), 3 species of pinnipeds (ringed, spotted, and bearded seal), and one marine carnivore (polar bear) are known to occur in or near the proposed study area. Other extralimital species that occasionally occur in very small numbers in the eastern portion of the Alaskan Beaufort Sea include the harbor porpoise and killer whale, however, because of the rarity of the latter species in the eastern part of the Beaufort Sea, they are not expected to be exposed to or affected by any activities associated with the proposed barging activities, and are not discussed further. Only the bowhead whale is listed as “Endangered” under the ESA.

In an effort to reduce redundancy, we have included the required information about these species and abundance estimations (to the extent known) of these species in Section 4 below.

4. A description of the status, distribution, and seasonal distribution (when applicable) of the affected species or stocks of marine mammals likely to be affected by such activities:

The following six species of cetaceans and seals can be expected to occur in the region of the proposed barging activity: bowhead, gray and beluga whales and ringed, spotted and bearded seals. These six species are discussed in this section and are the species for which general regulations governing potential incidental takes of small numbers of marine mammals are sought. The geographic boundaries and distribution, primary habitats, and population trends and risks are discussed under each species.

Three species of marine mammals, the Pacific walrus, sea otter and polar bear, are managed by the U.S. Fish and Wildlife Service (USFWS). Within the project activity areas in the Eastern Beaufort Sea, only the polar bear is known to occur and potential incidental take of this species will be dealt with under a separate application for a Letter of Authorization from the USFWS, however, information on polar bear is included in the Table 4-1.

Application for Incidental Harassment Authorization

Table 4-1. List of species, their habitats, conservation status, and estimated populations inhabiting the proposed barging activity areas located in the eastern portion of the Beaufort Sea

| Species (Stock) | Habitat | Beaufort Sea Stock and/or ESA Status ^{1/} | Estimated Abundance ^{2/} |
|--|------------------------------|--|---|
| Cetaceans | | | |
| bowhead whale (<i>Balaena mysticetus</i>) (Western Arctic stock) | Pack ice and coastal | ESA listed as Endangered, listed as depleted under MMPA, and classified as a strategic stock | 10,545 |
| gray whale (<i>Eschrichtius robustus</i>) (eastern north Pacific) | Coastal, lagoons | Not listed under ESA, not listed as depleted under MMPA, and not classified as a strategic stock | 18,813 |
| beluga whale (<i>Delphinapterus leucas</i>) (Beaufort Sea/eastern Chukchi Sea) | Offshore, coastal, ice edges | Not listed under ESA, not listed as depleted under MMPA, and not classified as a strategic stock | 39,258/3,710 |
| Pinnipeds | | | |
| ringed seal (<i>Phoca hispida</i>) (Alaska) | Landfast and pack ice | Not listed under ESA, not listed as depleted under MMPA, and not classified as a strategic stock | Up to 3.6 million; Currently, no reliable abundance estimate is available for the Beaufort Sea, however, combined with surveys from the Chukchi Sea, approximately 249,000 are estimated. |
| spotted seal (<i>Phoca largha</i>) | Pack ice | Not listed under ESA, not listed as depleted under MMPA, and not classified as a strategic stock | several thousand and several tens of thousands. An estimate with correction using 1992 data =59,214 seals but is preliminary at best. |
| bearded seal (<i>Erignathus barbatus</i>) | Pack ice | Not listed under ESA, not listed as depleted under MMPA, and not classified as a strategic stock | Currently, no reliable abundance estimate is available for this stock. Early estimates of the Bering-Chukchi Seas ranged from 250,000 to 300,000. |
| Carnivora | | | |
| polar bear (<i>Ursus maritimus</i>) | Coastal, ice | Currently not listed under ESA, not listed as depleted under MMPA, and not classified as a strategic stock; Proposed for listing as threatened throughout its range after 12-month petition finding (FR 1064-1098, Vol. 72, January 9, 2007) | Population estimates for the Southern Beaufort Sea population of northern Alaska is 2,272 bears. |

^{1/} ESA = Endangered Species Act. Stocks listed as depleted under the MMPA (Marine Mammal Protection Act) is described as any stock that falls below its optimum sustainable population must be classified as "depleted," 16 U.S.C. § 1362(1)(A). The numeric threshold for Optimum sustainable population (OSP) has been interpreted by NMFS and FWS as being above 0.6 K (i.e. greater than 60% of K, or carrying capacity). In other words, a stock that dropped in numbers to below 60% of K would qualify as "depleted" under the MMPA. The term "strategic stock" is defined as a marine mammal stock: (A) for which the level of direct human-caused mortality exceeds the Potential Biological Removal level; (B) which, based on the best available scientific information, is declining and is likely to be listed as a threatened species under the Endangered Species Act of 1973 . . . within the foreseeable future; or (C) which is listed as a threatened species or endangered species under the Endangered Species Act of 1973 . . . , or is designated as depleted under [the MMPA].

^{2/} See text under individual species for population estimate sources

Bowhead Whale (*Balaena mysticetus*)

The Western Arctic stock (discussed below) are distributed in seasonally ice-covered waters of the Arctic and near-arctic, generally between 60 and 75 N latitudes in the western Arctic Basin (Moore and Reeves 1993). Currently, five bowhead whale stocks are recognized by the International Whaling Commission (IWC 1992). Small stocks occur in the Canadian Arctic and West Greenland (Baffin Bay, Davis Strait, and Hudson Bay), the Okhotsk Sea (eastern Russia), and the Northeast Atlantic from Spitzbergen westward to eastern Greenland, and range in numbers from a few 10s to a few 100s (Zeh et al. 1993). The largest population is the Western Arctic stock, also known as the Bering, Chukchi, and Beaufort Sea stock (Rugh et al. 2003), and is the focus of this IHA.

In Alaskan waters, the majority of bowhead whales winter in the central and northwestern Bering Sea (November to March), migrate through the Chukchi Sea in the spring (March through June) following offshore ice leads around the coast of Alaska, and summer in the Canadian Beaufort Sea (mid-May through September) (Braham et al. 1980; Moore and Reeves 1993).

Bowheads tend to migrate west in deeper water (farther offshore) during years with higher-than-average ice coverage than in years with less ice (Moore 2000). During fall migration, most bowheads migrate west in water ranging from 15 to 200 m deep (Miller et al. 2002 in Richardson and Thomson 2002); some individuals enter shallower water, particularly in light ice years, but very few whales are ever seen shoreward of the barrier islands.

Bowhead whales typically reach the Barrow area during their westward migration from the feeding grounds in the Canadian Beaufort Sea in mid-September to late October. Although, over the years, local residents report having seen a small number of bowhead whales feeding off Barrow or in the pack ice off Barrow during the summer, indicating that this area may be an important feeding area. Autumn bowhead whaling near Barrow normally begins in mid-September, but may begin as early as August if whales are observed and ice conditions are favorable (USDI/BLM 2005). Whaling can continue into October, depending on the quota and conditions.

The pre-exploitation population of bowhead whales in the Bering, Chukchi, and Beaufort seas is estimated to be 10,400-23,000 whales, and was reduced by commercial whaling to perhaps 3,000 (Woodby and Botkin 1993). Up to the early 1990s, the population size was believed to be increasing at a rate of about 3.2% per year (Zeh et al. 1996; Angliss and Lodge 2002) despite annual subsistence harvests of 14-74 bowheads from 1973 to 1997 (Suydam et al. 1995) and 42, 35, 49, 37, and 35 in 1999 through 2003, respectively (Suydam and George 2004). This is consistent with an annual population growth rate of 3.4% (95% CL 1.7-5%) from 1978 to 2001 reported by George et al. (2004) who estimated the population in 2001 at approximately 10,470 animals. Based on the most recent abundance estimates using 2001 data, approximately 10,545 bowheads whales make up the Western Arctic stock, with a minimum estimate [$CV(N) = 0.128$] of 9,472 whales.

Application for Incidental Harassment Authorization

The inclusion of the abundance estimate for 2001 results in a rate of increase of 3.5 percent (CI = 2.2 to 4.9 percent) (Brandon and Wade 2004 *in* Angliss and Outlaw 2005). Calve counts in 2001 was the highest recorded at 121 individuals, and lends building evidence of a growing population.

This bowhead population is currently listed as Endangered under the ESA and is classified as a strategic stock by the NMFS (Angliss and Outlaw 2006).

Gray Whale (*Eschrichtius robustus*)

Gray whales originally inhabited both the North Atlantic and North Pacific oceans. The Atlantic populations are believed to have become extinct by the early 1700s. A relic population survives in the Western Pacific. The eastern Pacific or California gray whale population has recovered significantly from commercial whaling, and now numbers about 18,813, and is the focus stock under this IHA (Angliss and Outlaw 2006).

The eastern North Pacific population of the gray whale ranges from the Bering, Chukchi, and Beaufort seas (in summer) to the Gulf of California (in winter) (Rice 1998), however, gray whales have also been documented foraging in waters off of Southeast Alaska, British Columbia, Washington, Oregon, and California (Rice and Wolman 1971; Berzin 1984; Darling 1984; Quan 2000; Calambokidis et al. 2002). Most of the eastern north Pacific population makes a round-trip annual migration of more than 8,000 km (5,000 miles) from Alaska waters to Baja California in Mexico. From late May to early October, the majority of the population concentrates in the northern and western Bering Sea and the Chukchi Sea.

Typically, gray whales are found primarily in shallow water, and usually remain closer to shore than any other large cetacean. Gray whales are considered common in the nearshore waters of the eastern Chukchi Sea, and occasionally are seen east of Point Barrow in late-spring and summer. On wintering grounds, mainly along the west coast of Baja California, gray whales utilize shallow, nearly land-locked lagoons and bays (Rice et al. 1981). From late February to June, the population migrates back to arctic and sub arctic seas (Rice and Wolman 1971).

Most summering gray whales congregate in the northern Bering Sea, particularly off St. Lawrence Island and in the Chirikov Basin (Moore et al. 2000), and in the southern Chukchi Sea. More recently, Moore et al. (2003) suggested that gray whale use of Chirikov Basin was reduced, likely as a result of the combined effects of changing currents resulting in altered secondary productivity dominated by lower quality food. The northeastern-most of the recurring feeding areas is in the northeastern Chukchi Sea southwest of Barrow (Clarke et al. 1989).

Small numbers of gray whales have been observed entering the Beaufort Sea east of Point Barrow. Maher (1960) reported hunters at Cross Island took one gray whale in 1933. Aerial surveys conducted in the central Alaskan Beaufort Sea documented only one gray whale from 1979 to 1997. Since 1997, small numbers of gray whales have been

Application for Incidental Harassment Authorization

documented on several occasions in the central Alaskan Beaufort—mainly in the Harrison Bay area (Miller et al. 1999; Treacy 2000, Green and Negri 2005). Other reports of single gray whale sightings have been documented farther east of Harrison Bay (Rugh and Fraker 1981). In August 2001, Williams and Coltrane (2002) reported a single sighting of a gray whale near the Northstar production facility, indicating that small numbers do travel through the waters offshore from the Prudhoe Bay region during some summers, however, given their rare occurrence in the eastern portion of the Beaufort Sea in summer, no more than a few are expected during the summer and early fall.

Gray whales have been counted as they migrate southward past Granite Canyon in central California each year since 1967. The most recent abundance estimates are from southbound migration counts in 1997/98, 2000/01, and 2001/02 periods with abundance estimates for the aforementioned periods of 29,758, 19,448, and 18,178, respectively [Rugh et al. (In press) *in* Angliss and Outlaw 2005].

Previous variations in estimates may be attributed to differences in the proportion of the gray whale stock migrating as far as the central California coast each year. The decline in abundance estimates between the 2000/01, and 2001/02 may be an indication that the abundance was responding to environmental limitations as the population approaches carrying capacity (Angliss and Outlaw 2006). The lower counts conducted in 2000/01 and 2001/02 may have been due to a large number of whales that did not migrate as far south as Granite Canyon, or possibly, abundance may have actually declined following high mortality rates documented in 1999 and 2000 ([Rugh et al. (In press) *in* Angliss and Outlaw 2006].; Gulland et al. 2005). Low levels of strandings in 2001 and 2002 indicate the reported strandings in 1999-2000 were limited to those years.

The highest population estimate (29,758) was derived from counts during the 1997/98 southward migration (Angliss and Outlaw 2006). Using the mean of the 2000/01 and 2001/02 abundance estimates noted above is 18,813 animals; a minimum population estimate for gray whales using a CV of 0.069 for the combined survey years is 17,752 (Angliss and Outlaw 2006). Gray whale numbers increased steadily until at least 1998, with an estimated annual growth rate of 3.3% between 1967 and 1988 (Buckland et al. 1993). More recent estimated growth rates from 1967/68 through 2001/02 indicate an annual growth rate of 1.9% (SE = 0.32%) [Rugh et al. (In press) *in* Angliss and Outlaw 2005]. In addition, Rugh et al. (in press) estimated carrying capacity of 26,290 (CV = 0.059), indicating that recent reductions in abundance estimates may be a function of the population reaching its carrying capacity.

The eastern Pacific stock was removed from the Endangered Species List in 1994 and is not considered by NMFS to be a strategic stock.

Beluga Whale (*Delphinapterus leucas*)

The beluga whale is an arctic and sub arctic species that has several populations that occur in Alaska. In Alaska, beluga whales comprise five distinct stocks: Beaufort Sea, eastern Chukchi Sea, eastern Bering Sea, Bristol Bay, and Cook Inlet (O'Corry-Crowe et

Application for Incidental Harassment Authorization

al. 1997, Angliss and Lodge 2004). For the proposed project, only the Beaufort Sea stock and eastern Chukchi Sea stocks will be encountered. Some eastern Chukchi Sea animals enter the Beaufort Sea in late summer (Suydam et al. 2001).

Beluga whales of the Beaufort stock winter in the Bering Sea, summer in the eastern Beaufort Sea, and migrate around western and northern Alaska (Angliss and Lodge 2002). The majority of belugas in the Beaufort stock migrate into the Beaufort Sea in April or May, although some whales may pass Point Barrow as early as late March and as late as July (Braham et al. 1984; Ljungblad et al. 1984; Richardson et al. 1995).

Much of the Beaufort Sea seasonal population enters in the Mackenzie River estuary for a short period during July–August to molt their epidermis, but they spend most of the summer in offshore waters of the eastern Beaufort Sea and Amundsen Gulf (Davis and Evans 1982; Harwood et al. 1996). Belugas are rarely seen in the central Alaskan Beaufort Sea during the summer. During late summer and autumn, most belugas migrate far offshore near the pack ice front (Hazard 1988; Clarke et al. 1993; Miller et al. 1998) and may select deeper slope water independent of ice cover (Moore et al. 2000). Small numbers of belugas, however, are sometimes observed near the north coast of Alaska during the westward migration in late summer and autumn (Johnson 1979) but the main fall migration corridor of beluga whales is greater than 100 km (62 miles) north of the coast. Aerial and vessel-based seismic monitoring programs conducted in the central Alaskan Beaufort Sea from 1996 through 2001 observed only a few beluga whales migrating along or near the coast (LGL and Greeneridge 1996; Miller et al. 1998, 1999). The vast majority of belugas seen during those projects were far offshore. Satellite-linked telemetry data show that some belugas migrate west considerably farther offshore, as far north as 76°N to 78°N latitude (Richard et al. 1997, 2001).

The Beaufort population was estimated to contain 39,258 individuals as of 1992 (Angliss and Lodge 2002). This estimate is based on the application of a sightability correction factor of 2× to the 1992 uncorrected census of 19,629 individuals made by Harwood et al. (1996). This estimate was obtained from a partial survey of the known range of the Beaufort population and may be an underestimate of the true population size. This population is not considered by NMFS to be a strategic stock but the current population trend of the Beaufort Sea stock of beluga whales is unknown (Angliss and Outlaw 2006).

The abundance estimate considered the “most reliable” for the eastern Chukchi Sea beluga whale stock is 3,710, a result from 1989–1991 aerial surveys (Frost et al. 1993, Angliss and Lodge 2004). Additional surveys were conducted in 1998 (DeMaster et al. 1998) and again in July 2002 (Lowry and Frost 2002, cited in Angliss and Outlaw 2005), but both were partial surveys and therefore, a more recent abundance estimate is not available. This stock will not be encountered during the barging activities in the eastern Beaufort Sea, the population size is considered stable and not considered to be a strategic stock.

Ringed Seal (*Phoca hispida*)

In the North Pacific, ringed seals are found in the southern Bering Sea and range as far south as the Seas of Okhotsk and Japan. Throughout their range, ringed seals have an affinity for ice-covered waters and are well adapted to occupying seasonal and permanent ice, and are year-round residents throughout the Beaufort, Chukchi, and Bering Seas, as far south as Bristol Bay in years of extensive ice coverage. They tend to prefer large floes (i.e., > 48 m in diameter) and are often found in the interior ice pack where the sea ice coverage is greater than 90% (Simpkins et al. 2003), and remain in contact with ice most of the year and pup on the ice in late winter-early spring.

During winter, ringed seals occupy land fast ice and offshore pack ice of the Bering, Chukchi and Beaufort seas. Ringed seals maintain breathing holes in the ice and occupy lairs in accumulated snow (Smith and Stirling 1975). They give birth in lairs from mid-March through April, nurse their pups in the lairs for 5–8 weeks, and mate in late April and May (Smith 1973; Hammill et al. 1991; Lydersen and Hammill 1993).

During late April through June, ringed seals are distributed throughout their range from the southern ice edge northward (Braham et al. 1984). Preliminary results from recent surveys conducted in the Chukchi Sea in May-June 1999 and 2000 indicate that ringed seal density is higher in nearshore fast and pack ice, and lower in offshore pack ice [Bengtson et al. (in review) cited in Angliss and Outlaw 2005]. Frost and Lowry (1999) conducted surveys in May and results indicated that, in the Alaskan Beaufort Sea, the density of ringed seals in May-June is greater to the east of Flaxman Island than to the west.

No estimate for the size of the Alaska ringed seal stock is currently available (Angliss and Outlaw 2006). Past ringed seal population estimates in the Bering-Chukchi-Beaufort area ranged from 1-1.5 million to 3.3-3.6 million (Frost et al. 1988). Frost and Lowry (1981) estimated 80,000 ringed seals in the Beaufort Sea during summer and 40,000 during winter.

Aerial surveys within 20 nautical miles (nmi) of shore were conducted in May-June between 1986 and 1987 for a portion of the range of the ringed seal estimated 44,360 +/- 9,130 (96 percent CI) (Frost et al. 1988). Spring density estimates in the same area from 1985-1987 ranged from 1.01 to 2.94 seals/km² (Frost and Lowry 1988). Similar surveys for the Alaska Beaufort Sea between Kaktovik and Barrow occurred in the spring during several years in the 1990s with density estimates for all years ranging from 0.81-1.17 seals/km² with a mean of 0.98 seals/km² or approximately 18,000 hauled out ringed seals in the survey area. Surveys conducted in 1999 and 2000 between Shishmaref to Barrow in the eastern Chukchi Sea estimated abundance of ringed seals at 252,488 (SE = 47,204) and 208,857 (SE = 25,502), respectively (Bengtson et al. 2005). Combining this with the average abundance estimate of 230,673 seals from the eastern Chukchi Sea, results in a total of 249,000 seals.

It is not known whether the more recent lower densities correspond to an actual reduction in the population or are related to earlier survey dates in 1990s. At earlier dates, a higher

proportion of the seals are still using their lairs and are unavailable to be counted by aerial surveyors (Kelly et al. 2004). Frost et al. (2002) reanalyzed the earlier estimates for 1985-87 and reported ringed seal densities surveyed between Oliktok Point and Flaxman Island ranged from 0.56 to 1.16 seals/km² (about half the density originally reported) during the spring seasons of 1985 to 1987. Based on more recent surveys from 1996 through 1999, ringed seal density in fast ice areas between Oliktok Point and Flaxman Island ranged from 0.48 to 0.77 seals/km² (Frost et al. 2002).

BP's Northstar project, located near Prudhoe Bay, developed a seal survey and monitoring program to establish a baseline prior to construction and to monitor during initial operations for comparison. Ringed seal densities reported by Moulton et al. (2002) ranged from 0.39 to 0.63 seals/km² prior to construction in the Northstar development area. Ringed seal densities close to Northstar in 2000, 2001, and 2002 were not reduced relative to those farther away or to those during the 1997 to 1999 pre-development period (Moulton et al. 2003 a,b), however because aerial surveys will underestimate actual seal densities, the above density figures should be used as minimum estimates.

During summer, ringed seals are found dispersed throughout open water areas, although in some regions they move into coastal areas (Smith 1987; Harwood and Stirling 1992). During the open water period, ringed seals in the eastern Beaufort Sea are widely dispersed as single animals or small groups (Harwood and Stirling 1992). Marine mammal monitoring in the nearshore central Beaufort Sea confirms these generalities (Moulton and Lawson 2002; Williams et al. 2004, Green and Negri 2005, 2006).

Large concentrations of ringed seals are not expected to be encountered near each of the proposed barging activity areas in the eastern Beaufort Sea during the summer and fall time period. The Alaska stock of ringed seals is not classified as a strategic stock by the NMFS.

Spotted Seal (*Phoca largha*)

Spotted seals occur in the Beaufort, Chukchi, Bering and Okhotsk seas, and south to the northern Yellow Sea and western Sea of Japan (Shaughnessy and Fay 1977). Based on satellite tagging studies, spotted seals migrate south from the Chukchi Sea in October and pass through the Bering Strait in November and overwinter in the Bering Sea along the ice edge (Lowry et al. 1998).

During spring when pupping, breeding, and molting occur, spotted seals tend to prefer small floes (less than 20 meters in diameter), and inhabit mainly the southern margin of the ice in the Okhotsk and Bering seas, with movement to coastal habitats after the retreat of the sea ice (Shaughnessy and Fay 1977; Quakenbush 1988; Rugh et al. 1997; Simpkins et al. 2003).

In summer, the majority of spotted seals are found in the Bering and Chukchi seas, but do range into the Beaufort Sea (Rugh et al. 1997; Lowry et al. 1998) from July until September. At this time of year, spotted seals haul out on land part of the time, but also

Application for Incidental Harassment Authorization

spend extended periods at sea. The seals are most commonly seen in bays, lagoons and estuaries and are typically not associated with pack ice unless it is near to shore.

A small number of spotted seal haul-outs are documented in the central Beaufort Sea near the deltas of the Colville River and, previously, the Sagavanirktok River. Historically, these sites supported as many as 400–600 spotted seals, but in recent times <20 seals have been seen at any one site (Johnson et al. 1999).

As the ice cover thickens with the onset of winter, spotted seals leave the northern portions of their range and move into the Bering Sea (Lowry et al. 1998).

Previous studies from 1996 to 2001 indicate that few spotted seals (a few tens) utilize the central Alaskan Beaufort Sea (Moulton and Lawson 2002; Treacy 2002 a, b). In total, there are probably no more than a few tens of spotted seals along the coast of the central Alaska Beaufort Sea during summer and early fall with very few, if any occurring in the eastern portion of the Beaufort Sea.

A reliable abundance estimate for spotted seal is not currently available (Angliss and Outlaw 2006), however, early estimates of the size of the world population of spotted seals was 335,000–450,000 animals and the size of the Bering Sea population, including animals in Russian waters, was estimated to be 200,000–250,000 animals (Burns 1973 *cited in* Angliss and Lodge 2004). The total number of spotted seals in Alaskan waters is not known (Angliss and Lodge 2004), but the estimate is most likely between several thousand and several tens of thousands (Rugh et al. 1997). Using maximum counts at known haulouts from 1992 (4,135 seals), and a preliminary correction factor for missed seals developed by the Alaska Department of Fish and Game (Lowry et al. 1994), an abundance estimate of 59,214 was calculated for the Alaska stock (Angliss and Lodge 2004).

The activity associated with the proposed barging in the eastern Beaufort Sea is expected to encounter few to no spotted seals. The Alaska stock of spotted seals is not classified as a strategic stock by NMFS.

Bearded Seal (*Erignathus barbatus*)

Bearded seals are associated with sea ice and have a circumpolar distribution (Burns 1981). Bearded seals are predominately benthic feeders, and prefer waters less than 200 meters in depth.

Seasonal movements of bearded seals are directly related to the advance and retreat of sea ice and to water depth (Kelly 1988). During winter they are most common in broken pack ice and in some areas also inhabit shorefast ice (Smith and Hammill 1981). In Alaska waters, bearded seals are distributed over the continental shelf of the Bering, Chukchi, and Beaufort Seas, but are more concentrated in the northern part of the Bering Sea from January to April (Burns 1981).

Application for Incidental Harassment Authorization

During winter, most bearded seals in Alaskan waters are found in the Bering Sea. In the Chukchi and Beaufort seas, favorable conditions are more limited, and consequently, bearded seals are less abundant there during winter. From mid- to late-April to June, as the ice recedes, some of the bearded seals migrate northward through the Bering Strait and spend the summer along the ice edge in the Chukchi Sea (Burns 1967, Burns 1981).

Recent spring surveys along the Alaskan coast indicate that bearded seals tend to prefer areas of between 70% and 90% sea ice coverage, and are typically more abundant greater than 20 nautical miles of shore, with the exception of high concentrations nearshore to the south of Kivalina in the Chukchi Sea (Bengtson et al. 2000; Simpkins et al. 2003).

During the summer in the Chukchi Sea, bearded seals are most associated with the pack ice edge near the continental shelf. The near shore areas of the central and western Beaufort Sea provide somewhat more limited habitat because the continental shelf is narrower and the pack ice edge frequently occurs seaward of the shelf and over waters greater than 200 meters in depth. The preferred habitat in the Beaufort Sea during the open water period is the continental shelf seaward of the scour zone.

A reliable abundance estimate for the Alaska stock of bearded seals is currently not available. The most recent surveys occurred in May-June of 1999 and 2000 between Shismaref and Barrow with average densities of 0.07 seals per km² and 0.14 seals per km², respectively, however, there is no correction factor available for these data. Early estimates of the Bering-Chukchi Sea population ranged from 250,000 to 300,000 (Burns 1981).

No reliable estimate of bearded seal abundance is available for the Beaufort Sea (Angliss and Lodge 2002). Aerial surveys conducted by Minerals Management Services in fall 2000 and 2001 sighted a total of 46 bearded seals during survey flights conducted between September and October (Treacy 2002 a, b), with all but two sightings recorded east of 147°W and all sightings were within 40 nautical miles of shore. Aerial surveys conducted from 1997 to 2002 in the vicinity of Northstar Island also reported small numbers of bearded seals, ranging from none to 15 seals (Moulton et al. 2003c).

The proposed barging activity areas may encounter bearded seals during the open-water season, however, the number of bearded seals is expected to be small. The Alaska stock of bearded seals is not classified by NMFS as a strategic stock.

5. The type of incidental taking authorization that is being requested (i.e. takes by harassment only; takes by harassment, injury and/or death) and the method of incidental taking:

The authorization requested is for Level B Harassment associated with underwater noise emanating from the transiting barges. No intentional or other taking of any marine mammal is planned at any time during the operation.

6. **By age, sex, and reproductive condition (if possible), the number of marine mammals (by species) that may be taken by each type of taking identified in paragraph (a)(5) of this section, and the number of times such takings by each type of taking are likely to occur;**

The potential harassment of marine mammals associated with the 2007 FEX L.P. barging program is limited to underwater acoustical disturbance from the noise levels emanating from barge engines (propeller cavitation). There are no collision concerns due to the slow vessel speeds (@10 km/hr or 5 kt). Deleterious effects of noise include masking of calls, avoidance of noise contaminated areas, startle responses, defense responses, annoyance or helplessness, and temporary or permanent threshold shifts (TTS and PTS) (Kastak and Schusterman 1996). The 2005 and 2006 FEX L.P. barging marine mammal monitoring programs investigated disturbance of barging traffic by noting behavioral reactions of the marine mammals observed. Reactions fell into three categories: no reaction, mild reaction (a mild change in behavior), or strong reaction (essentially a startle response). This information provides one basis for estimating the number of animals that might be harassed by the 2007 program.

A second means of estimating potential harassment numbers is estimate the area surrounding each operating vessel that is ensounded at sound levels deemed harmful to marine mammals, then estimate, based on published density estimates, the number of marine mammals potentially exposed to these sound levels. For baleen whales NOAA Fisheries has proposed the "120-dB" rule based on research by Malme et al. (1983, 1984, 1988) regarding avoidance responses of gray whales (Kastak and Schusterman 1996). For pinnipeds recent research (Kastak et al. 1999, 2005; Kastelein et al. 2006) on noise effects have focused on the onset of TTS, or the point where temporary auditory loss occurs. For instance, Kastak et al. (1999) reported that a TTS of about 4.8 dB occurred in a harbor seal exposed to sound pressure levels equivalent to 135-150 dB for about 22 minutes. However, TTS is a function of both sound pressure level and duration. Onset of TTS should occur at a higher sound pressure level at shorter durations, with very high levels needed to cause TTS for short impulse noises (Finneran et al. 2003).

Table 1 provides measured and calculated underwater noise exposure levels (Zykov and Hannay 2006) from the vessels available for this barging project. The two principal barges planned for this project, *Stryker* and *Garrett*, had nearly equivalent sound levels at source while loaded (@174 dB), attenuating to 140 dB at 50 m and 120 dB at about 1 km. Both vessels were considerably quieter while traveling unloaded; the *Stryker* emanating source sounds of only 162.6 dB attenuating to 140 dB in only 14 m and 120 dB in 187 m. Both the *Stryker* and *Garrett* are smaller self-propelled flexi-float barges with unloaded sound levels quieter than the 16-ft aluminum boat measured in Zykov and Hannay's (2006) study. The *Sag River* and *Kavik River* tugs, unloaded, produced sound levels similar to the *Stryker* and *Garrett* unloaded. The *Kuparuk*, a sister-tug to the *Sag River* and *Kavik River*, was measured while pushing a partial load (over 60 tons), and was nearly 10 dB louder at source. The 120 dB isopleth was calculated to extend approximately 4.225 km from the *Kuparuk*.

Application for Incidental Harassment Authorization

Although propeller cavitation generated noise is considered continuous, the vessels are moving and represent a short duration source to a stationary marine mammal. For instance the maximum time a pinniped would be exposed to sound levels greater than 120 dB by the *Stryker* (loaded) traveling at 10 km/hr (5 kt) would only be about 6 minutes (actually less than that given that a major portion of that time the seal's head would be at the surface and out of the water). Exposure at 140 dB or greater would be only a few seconds. For the loudest source (*Kuparuk* loaded), exposure to greater than 140 dB would only be about a minute.

Three principal groups of marine mammals are known to occur in the Beaufort Sea: cetaceans (bowhead whales, beluga, gray whales, and possibly killer whales), pinnipeds (ringed, spotted, and bearded seals, and possibly walrus), and polar bears. Polar bears are managed under the jurisdiction of the U.S. Fish and Wildlife Service and are not discussed further in this assessment.

Cetaceans

Harassment of cetaceans is possible by the 2007 planned barging operations based on the fact that bowhead whales, gray whales, and beluga whales were all observed during the 2005 operations (although no cetaceans were observed during 2006). Gray whales in 2005 were observed near Pt. Barrow, outside the West Dock/Cape Simpson operating lane, during periods the vessels traveled to Elson Lagoon to avoid foul weather. No gray whales have been observed between West Dock and Cape Simpson, and are not expected to be encountered unless weather conditions once again dictate the safety need of the vessels anchoring at Elson Lagoon.

Beluga distribution is difficult to predict. Sightings are always possible, especially if the pack ice is nearby.

The barging travel route between West Dock and Cape Simpson approximately follows the 7.5 m (25-ft) isobath. This nearshore depth zone represents the southern edge of the bowhead fall migration route. Aerial surveys conducted by Treacy (2002) between 1982 and 2001 found bowheads migrating in water this shallow in only 5 (25%) of the 20 years of survey. Thus, given the shallow water barging travel route, and the inter-annual differences in whale use of these waters, the number of whale sightings expected to be encountered might vary from 0 (as in 2006) to 9 (in 2005). As none of the 9 whales encountered in 2005 exhibited any noticeable reaction to the vessels (and were observed at distances from approximately 300 m to "at the horizon"), there was no discernable evidence of take.

Some of the whales observed in 2005 may have briefly occurred in the 120-dB sonification zone (1 km radius), therefore, Level B harassment of bowhead whales using the 120-dB criteria is possible. However, given the shallow water travel route, the low whale use of this shallow water area, the presence of marine mammal observers onboard the barges to detect whales early and help direct the barge away from the whales, and the relatively short distances to the 120-dB isopleths, especially for the half the time the

vessels are traveling unloaded, we do not expect more than a half dozen bowhead whales maximum could be exposed to sound levels greater than 120 dB during the 2007 barging season.

Pinnipeds

During the 2005 and 2006 barging season, 2,419 seals representing three species (ringed, spotted, and bearded) were recorded, approximately 90 percent of which were ringed seals. Of these 377 (15.6%) exhibited a startled like reaction, most often because the seal was within 30 m of the vessel. Other seals (635 or 26%) exhibited a change in behavior in the presence of the vessel, most of which could be construed as curiosity viewing or swimming slowly away. These behaviors probably do not constitute the “disruption of behavioral patterns” defining Level B harassment. Thus, one measure of the potential take of pinnipeds would be to assume barging effort similar to 2005 and estimate that the same number of seals that were observed to react strongly in 2005 (@200) would react in 2007. Given that 91 percent of the pinniped sightings were identified as ringed seals, 5 percent spotted seals, and 4 percent bearded seals, our take estimate for the 2007 barging season would be 182 ringed seals, 10 spotted seals, and 8 bearded seals. These numbers, however, are not correct for observer error and probably represent the number of startle reactions we would expect to record. Given the time traveling under poor viewing conditions due to weather or darkness, the number of actual startle reactions would be approximately double that, or 400 seals total.

A second way to estimate take is to estimate the number of seals that would occur within a specific sonification zone. For example, in a given barge roundtrip, the area of sonification using the 140-dB isopleth is 240 km distance between West Dock and Cape Simpson \times (50 m distance to isopleth \times 2) = 24 km² for the loaded run and 240 km \times (14 m \times 2) = 6.7 km² for the unloaded run, or 24 + 6.7 = 30.7 km² for the full roundtrip. Given an average density of 1.0 ringed seals per km² for this depth category based on Frost et al. (2002), approximately 31 ringed seals would be expected to be briefly (a maximum of 18 sec when the vessel is traveling at 10 km/hr) exposed to sound levels exceeding 140 dB on each barge trip. For a resupply barging effort of 15 roundtrips, such as in 2006, that would equate to 465 ringed seals (as well as 26 spotted seals and 20 bearded seals), and double that for an effort of 30 roundtrips such as in 2005, or 930 ringed seals (52 spotted seals and 40 bearded seals). These values should be construed as an absolute maximum given that the shape of the sonification cone, exposure time would decrease as a function of seal distance from the vessel and as a function of time actually spent underwater during this brief exposure. Also, given the very brief exposure time, is not apparent that any of these noise exposures actually represent a TSS.

Thus the number of ringed seals expected to be exposed to sound levels greater than 140 dB by the 2007 barging operations ranges between 182 and 930 seals for a demobilization level of operation and approximately half that for a re-supply operation. Extrapolating from what information are available, based on actual observations during the 2005 and 2006 seasons, we are applying for a harassment take of 400 ringed seals, 20 spotted seals, and 20 bearded seals.

7. The anticipated impact of the activity upon the species or stock of marine mammals:

Anticipated impact of the transiting barges is expected to be limited to very short-term (minutes) and localized behavioral changes involving small numbers of seals. Any exposure to other marine mammals will be limited to distant and transient exposure as well. No population or stock-level impacts are anticipated.

8. The anticipated impact of the activity on the availability of the species or stocks of marine mammals for subsistence uses:

Barrow residents are the primary subsistence users in the activity area. The subsistence harvest during winter and spring is primarily ringed seals, but during the open-water period both ringed and bearded seals are taken. Barrow hunters may hunt year round; however, in more recent years most of the harvest has been in the summer during open water instead of the more difficult hunting of seals at holes and lairs (McLaren 1958, Nelson 1969). The Barrow fall bowhead whaling grounds, in some years, takes in the Cape Simpson and Point Lonely areas (e.g. 1990 season, when a large aggregation of feeding bowheads were pursued by Barrow hunters).

The most important area for Nuiqsut hunters is off the Colville River Delta in Harrison Bay, between Fish Creek and Pingok Island (149°40' W). Seal hunting occurs in this area by snow machine before spring break-up and by boat during summer. Subsistence patterns are reflected in harvest data collected in 1992 where Nuiqsut hunters harvested 22 of 24 ringed seals and all 16 bearded seals during the open water season from July to October (Fuller and George 1997). Harvest data for 1994 and 1995 show 17 of 23 ringed seals were taken from June to August, while there was no record of bearded seals being harvested during these years (Brower and Opie 1997).

Due to the transient and temporary nature of the barge operation, impacts upon these seals are expected to have no more than a negligible impact on subsistence uses of ringed and bearded seals because:

- Transient operations would temporarily displace relatively few seals.
- There is no evidence that seals would likely move more than a very short distance away from vessel traffic and, therefore, will remain in the area for potential harvest by native hunters.
- Studies at the Northstar development, which is much larger than the proposed barge operation, found no evidence of the development activities affecting the distribution of seals (Williams and Moulton, 2001).

Application for Incidental Harassment Authorization

- The area where barge operations would be conducted is small compared to the large Beaufort Sea subsistence hunting area associated with the extremely wide distribution of ringed seals.

In order to further minimize any effect of barge operations on the availability of seals for subsistence, the tugs and barges will strictly follow U.S. Coast Guard rules and regulations near coastal water, therefore avoiding hunters and the locations of any subsistence hunting areas.

The barging, as scheduled, will be completed before the westward migration of bowhead whales in the fall and the associated subsistence activities by the local whalers. Finally, the travel route occurs west of Cross Island (Nuiqsut fall bowhead camp) and east of Barrow, therefore it does not pass by any of the whaling base camps.

9. The anticipated impact of the activity upon the habitat of the marine mammal populations, and or likelihood of restoration of the affected habitats:

As it does for marine mammals, vessel noises have the potential to disturb populations of fish, zooplankton, and benthic organisms that are important dietary components of marine mammals. Bowhead whales, which feed on swarms of copepods and euphasiids, feed in Alaskan Beaufort Sea on an irregular basis (compared the Canadian Beaufort Sea), but might be found feeding at any location along the transit route. All pinnipeds observed along the transit route we would expect to be regularly feeding in the vicinity.

While schooling fish will display avoidance responses in the presence of moving vessels (Misund et al. 1996, Misund 1997), impacts are likely temporary and there is no evidence of impact to the availability of these fish to piscivorous pinnipeds and cetaceans. Zooplankton and benthic organisms have limited and variable abilities to detect sound; therefore, noise associated impacts from vessels are probably negligible to these organisms and the marine mammals that prey on them.

No disruption of bottom substrates or pollution of the water columns important to marine mammals will be allowed as part of this project.

10. The anticipated impact of the loss or modification of the habitat on the marine mammal populations involved:

Impacts to marine mammal habitat would be negligible as a result of this barging project. Therefore, no habitat related impacts to marine mammals is expected.

11. The availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, their habitat, and on their availability for subsistence uses, paying particular attention to rookeries, mating grounds, and areas of similar significance:

Application for Incidental Harassment Authorization

Effects on most individual seals and other mammals are expected to be limited to localized and temporary displacement (Level B Harassment). No greater than a negligible impact is anticipated on the species or stock or the availability of the species for subsistence uses. Moreover, any effects on ringed or bearded seal habitat are expected to be temporary, localized, and largely limited to a relatively small area along the transect area.

Nevertheless, all activities will continue to be conducted to ensure the least practical adverse impact on the species, habitat, and availability for subsistence uses.

12. Where the proposed activity would take place in or near a traditional Arctic subsistence hunting area and/or may affect the availability of a species or stock of marine mammal for Arctic subsistence uses, the applicant must submit either a plan of cooperation or information that identifies what measures have been taken to minimize any adverse effects on the availability of marine mammals for subsistence uses. A plan must include the following:

(i) A statement that the applicant has notified and provided the affected subsistence community with a draft plan of cooperation: *FEX is engaged in the process to obtain a Conflict Avoidance Agreement (CAA) with the Alaska Eskimo Whaling Commission (AEWC).*

(ii) A schedule for meetings with the affected subsistence communities to discuss proposed activities and to resolve potential conflicts regarding any aspects of either the operation or the plan of cooperation: *Meetings have been held annually in Barrow, Kaktovik, and Nuiqsut with members of the whaling and subsistence community including the AEWC, the Whaling Captain's Association, and the subsistence advisory board. FEX continues to maintain interactive dialogue to resolve conflicts and to notify communities of any changes in the operations. The FEX Subsistence Plan of cooperation is attached.*

(iii) A description of what measures the applicant has taken to ensure that proposed activities will not interfere with subsistence whaling or sealing: *FEX will place both marine mammal biologists (MMBs) and native marine mammal observers (MMOs) onboard each vessel. The MMOs will maintain communication between subsistence users (via AEWC) and planned operations to ensure interference does not occur.*

(iv) What plans the applicant has to continue to meet with the affected communities, both prior to and while conducting the activity, to resolve conflicts and to notify the communities of any changes in the operations: *FEX will continue to maintain active dialogue before the start of 2007 project barging activities to resolve conflicts and to notify communities of any changes in the operations. FEX schedules will accommodate the desires of the subsistence community by avoidance of the areas of interest. FEX will meet with local National Oceanic and Atmospheric Administration representative and will act on the advice presented during the meeting. For example, FEX learned that*

activities could deflect bowhead whales and arranged the schedule and travel route to avoid such deflection.

- 13. The suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species, the level of taking or impacts that are expected to be present while conducting activities and suggested means of minimizing burdens by coordinating such reporting requirements with other schemes already applicable to persons conducting such activity. Monitoring plans include a description of the survey techniques to determine the movement and activity of marine mammals near the activity site(s) including migration and other habitat uses, such as feeding.**

As in 2005 and 2006 FEX will conduct a marine mammal monitoring program as part of the 2007 program. This program involves the placement of both an MMO and MMB onboard each vessel to conduct continuous monitoring for marine mammals. The MMOs will be trained by a qualified marine mammal biologist.

The observers will scan the area around tug/barge with 7x50 reticule binoculars during the daylight hours, and document the presence, distribution, behavior, and reaction of marine mammals sighted from project-associated vessels. The primary purpose of the marine mammal monitoring program is to monitor the reaction of marine mammals to the presence of the vessels, and to detect early any whales occurring in the barge path thereby allowing the vessel captain time to avoid a close approach to the animals. The 2005 and 2006 monitoring reports, with their associated methodologies and results, are attached.

Reports for each roundtrip will be prepared and provided to NOAA Fisheries and AEWC at the end of each trip. If a coordination center is opened by other North Slope operators and operated during FEX's monitoring operations, marine mammals trip sighting reports will be provided to that location.

A report documenting and analyzing any harassment or other "takes" of marine mammals that occur as part of this monitoring program will be provided to NOAA Fisheries within 90 days of completion of the monitoring activities. Copies will be provided to other qualified interested parties.

- 14. Suggested means of learning of, encouraging, and coordinating research opportunities, plans, and activities relating to reducing such incidental taking and evaluating its effects.**

FEX contributions include marine mammal observations conducted by qualified local native observers. This data contributes to the current marine mammal database. Via the CAA and Subsistence Plan of Cooperation, and newsletters, information is shared with local residents and subsistence users concerned with evaluation of incidental taking of marine mammals.

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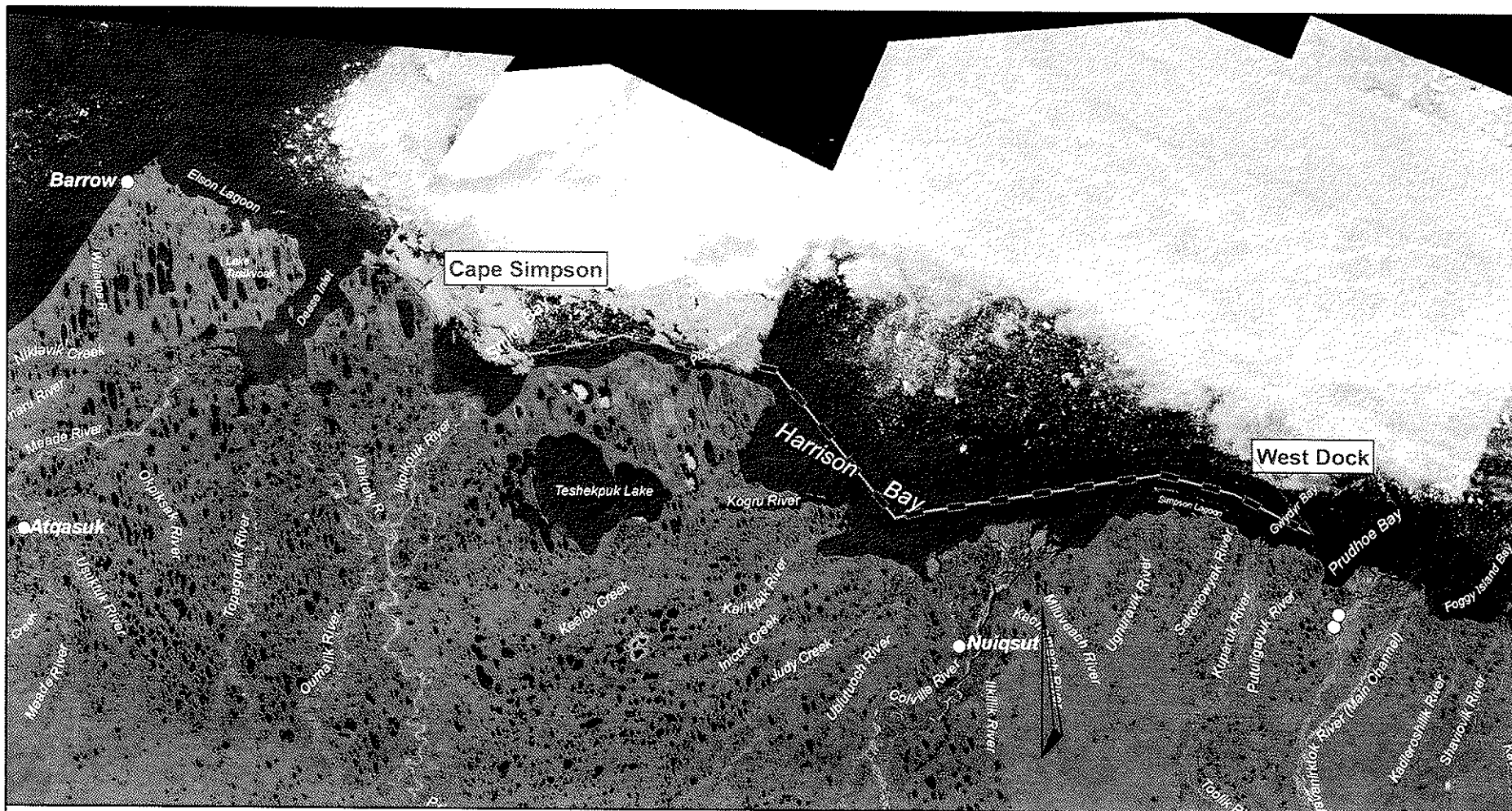
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Basemap: Landsat MSS mosaic (1977-1986) (USGS)

Proposed Barging Route

FEX L.P.

PROPOSED BARGING ROUTE

SCALE:

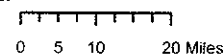
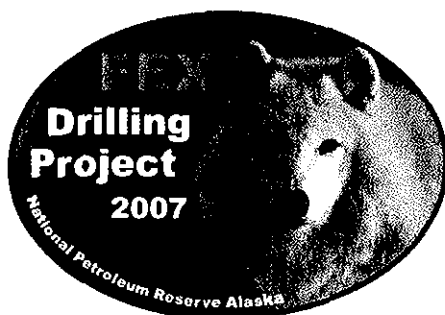


FIGURE:

1

Table 1. Underwater broadband noise levels associated with FEX barging vessels. Source Zykov and Hannay (2006).

| Vessel | Sound Level at Meas. Loc. | Distance to Vessel from Meas. Loc. | Estimated Sound Level at Distance | | | Estimate Sound Level at Isopleth | | |
|------------------------|------------------------------|---------------------------------------|-----------------------------------|----------|----------|----------------------------------|--------|---------|
| | | | 1 m | 50 m | 500 m | 160 dB | 140 dB | 120 dB |
| Stryker (Loaded) | 138.8 dB | 57 m | 174.0 dB | 140.0 dB | 125.0 dB | 5 m | 50 m | 1,075 m |
| Stryker (Unloaded) | 131.7 dB | 37 m | 162.6 dB | 128.6 dB | 113.6 dB | 2 m | 14 m | 187 m |
| Garrett (Loaded) | 142.4 dB | 37 m | 173.8 dB | 139.8 dB | 124.8 dB | 5 m | 49 m | 1,050 m |
| Kuparuk (Loaded) | 148.1 dB | 55 m | 182.9 dB | 148.9 dB | 133.9 dB | 15 m | 196 m | 4,225 m |
| Kavik River (Unloaded) | 135.9 dB | 121 m | 177.6 dB | 143.6 dB | 128.6 dB | 9 m | 88 m | 1,870 m |
| Sag River (Unloaded) | 144.8 dB | 26 m | 173.0 dB | 139.0 dB | 124.0 dB | 5 m | 46 m | 925 m |
| Aluminum Boat 16' | 147.9 dB | 10 m | 167.6 dB | 133.6 dB | 118.6 dB | 3 m | 25 m | 403 m |



FEX L.P. Northwest NPR-A Exploration Drilling 2006/2007 Subsistence Plan of Cooperation

September, 2006

Submitted to:

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Table of Contents

| | <u>Page</u> |
|--|-------------|
| 1.0 FEX L.P. Exploration Project Description | 1 |
| 2.0 SUBSISTENCE COMMITMENT OVERVIEW | 2 |
| 2.1 Consultations..... | 2 |
| 2.1.1 Communities..... | 2 |
| 2.1.2 North Slope Borough..... | 3 |
| 2.1.3 AEWG..... | 3 |
| 2.1.4 BLM SAP..... | 3 |
| 2.1.5 UIC..... | 3 |
| 2.1.6 Federal and State Agencies..... | 3 |
| 2.2 Subsistence Conflicts and Reporting | 4 |
| 2.2.1 Subsistence Comment Recording | 4 |
| 2.2.2 Local Employment..... | 4 |
| 2.2.3 Visitors..... | 4 |
| 2.2.4 Safe Subsistence Activities..... | 5 |
| 2.2.5 Public Access..... | 5 |
| 2.2.6 Employee Training..... | 5 |
| 2.2.7 Aircraft..... | 6 |
| 2.2.8 FEX Local Contract Opportunities..... | 6 |
| 2.2.9 Public Information..... | 6 |
| 3.0 Conclusion | 6 |

List of Tables

| | |
|--|---|
| 2.2.5-1 FEX L.P. Personnel Contacts..... | 5 |
|--|---|

List of Attachments

| | |
|--|----|
| Attachment A - Subsistence Advisor Trainee Job Description | 8 |
| Attachment B - Marine Mammal Observer Job Description..... | 10 |
| Attachment C – Newsletter, Comment Card, Television and Radio Advertisements | 13 |

LIST OF ABBREVIATIONS AND ACRONYMS

| | |
|------------|---|
| ADEC | Alaska Department of Environmental Conservation |
| ADNR | Alaska Department of Natural Resources |
| AEWC | Alaska Eskimo Whaling Commission |
| AOGCC | Alaska Oil and Gas Conservation Commission |
| BLM | Bureau of Land Management |
| CAA | Conflict Avoidance Agreement |
| Com Center | Communications Center |
| FEX | FEX L.P. |
| GC | General Concurrence |
| GCD | General Concurrence Determination |
| GP | General Permit |
| GPD | Gallons per day |
| LPVs | Low-pressure vehicles |
| MSGP 1 | Minor Source General Permit 1 |
| NOAA | National Oceanic and Atmospheric Administration |
| NW NPR-A | Northwest National Petroleum Reserve – Alaska |
| SPCC | Spill Prevention and Countermeasure Plan |
| USFWS | U.S. Fish and Wildlife Service |
| ACMP | Alaska Coastal Management Program |
| NSB | North Slope Borough |
| IMT | Incident Management Team |
| NSTC | North Slope Training Cooperative |
| ASRC | Arctic Slope Regional Corporation |
| ICAS | Inupiat Community of the Arctic Slope |

1.0 FEX L.P. EXPLORATION PROJECT DESCRIPTION

FEX L.P. (FEX) a subsidiary of Talisman Energy, Incorporated, in Calgary, Alberta, Canada, is currently exploring for oil and gas in the Northwest National Petroleum Reserve-Alaska (NPR-A), approximately 70 miles southeast of Barrow.

The following activities took place during the summers of 2005 and 2006 to prepare for the winter exploration drilling activities:

- A bathymetric survey at Cape Simpson;
- Lake and fish studies;
- Archaeological and cultural survey; and,
- Surveying for the ice airstrip, ice pad drill sites, snow-packed low pressure vehicle (LPV) tundra route, and the ice road.

The project activities for 2006/2007 drilling season will commence with the mobilization of equipment needed to drill up to five wells in the Northwest NPR-A. Barging activities were coordinated with the Alaska Eskimo Whaling Commission (AEWC) and the Nuiqsut, Kaktovik, Wainwright, and Pt. Hope Whaling Captain's Associations with the signing of the 2006 Open Water Season Programmatic Conflict Avoidance Agreement (CAA). Drilling equipment was barged from the West Dock staging area at Prudhoe Bay to Cape Simpson in August and September 2006 and will be on standby until the winter tundra travel season opens. Barges were accompanied by marine biologist and marine mammal observer (MMO) teams.

Overland mobilization of project components to the drill sites will proceed to the project area when tundra travel conditions allow. Overland travel and equipment mobilization to the drill sites will be via low-pressure all-terrain vehicles (LPVs) on snow-packed tundra trails from Cape Simpson, Drill Site 2P, and possibly Barrow. An approximate 81-mile (mi) ice road will be constructed to protect the tundra from frequent traveling between the well site ice pads and airstrips. The ice road will be used for re-supply and equipment demobilization. Ice roads and pads and ice airstrip construction will begin when the permits and approvals are available and tundra conditions and temperatures allow, which is expected to occur in late December 2006.

Onsite camp facilities will be in the project area from approximately December 15, 2006 until April 20, 2007. The Arctic Wolf rig camp will house 64 employees. Two camps called the Talkeetna and Alaska Camps, which are considered as one main camp, will accompany the Nabors rig and will house 60 and 76 employees, respectively. Two "sleigh" or "gypsy" camps will accompany and support ice-making crews and will house approximately 36 employees each during the first "tundra travel" phase when ice airstrips and ice pad construction begin. As soon as the drill rig is hauled to the first well pad, the small camp will be combined with the main camp on the well pad. Supplies and equipment inventory will be maintained for the duration of the project.

FEX is committed to making sure that no project components or trash is left behind. Camp and drilling wastes will be handled, stored, and removed from the project area in full compliance with federal, state and North Slope Borough (NSB) regulations and policies. Fuel will be stored with 110 percent secondary containment. Best Management Practices will be used throughout every stage of the project. Project-specific federal, state, and NSB stipulations will mitigate potential effects to humans, resources, and subsistence hunting.

Demobilization of the drilling rig and equipment during summer 2007 from Cape Simpson to West Dock will conclude the exploration drilling project. Two people will maintain the equipment and coordinate visits to the area.

2.0 SUBSISTENCE COMMITMENT OVERVIEW

FEX is committed to preventing potential unreasonable conflicts with subsistence activities and has developed the Northwest NPR-A 2006/2007 Winter Exploration Drilling Program Subsistence Plan of Cooperation based on consultations with the NSB, AEW, Inupiat Community of the Arctic Slope (ICAS), the Bureau of Land Management (BLM) Subsistence Advisory Panel (SAP), and the villages of Atkasuk, Barrow, Nuiqsut, Point Lay and Wainwright. The plan is intended to mitigate potential conflicts between the FEX winter exploration drilling program and subsistence hunting of whales, caribou and polar bears. FEX's strategy for minimizing subsistence conflicts includes hiring MMOs to record mammal sightings on the barges and Subsistence Advisors to implement Traditional Knowledge at the drill sites.

All crewmembers will receive North Slope Environmental and Cultural Awareness training, and will participate in specific training including operational safety and polar bear training. A Health, Safety, and Environmental (HSE) Officer and a Field Environmental Compliance (FEC) coordinator will be on site and responsible for compliance with permit stipulations.

Industry personnel will not enter into subsistence campsites unless permission has been obtained from cabin and native allotment owners.

2.1 Consultations

2.1.1 Communities

FEX consulted with the communities of Barrow, Nuiqsut, Atkasuk, Point Lay and Wainwright to discuss potential conflicts with project siting, timing, and methods of proposed operations and to identify safeguards to prevent unreasonable subsistence conflicts. Each village was contacted prior to the meeting with FEX. At the beginning of each meeting FEX encouraged participants to comment and explained that comments, concerns, or other information submitted was actively solicited and welcome. A FEX sign printed in Inupiat and English welcomed the community to the meeting and encouraged questions, concerns, and comments.

Following is a list of meetings and consultations that have taken place:

- NSB: Mayor, Planning and Wildlife Departments, and Planning Commission
- AEW (March 15, 2006, April 7 & 8, 2006)
- ICAS
- SAP Workshops and Meetings
- Arctic Slope Regional Corporation (ASRC)
- Ukpeagvik Inupiat Corporation (UIC)
- Kuukpik Corporation
- Barrow Open House (May 25, 2005, SAP Meeting March 23, 2006, and June 28, 2006)

- Wainwright (June 8, 2005 and SAP meeting August 3, 2006)
- Atkasuk (June 9, 2005 and June 27, 2006)
- Nuiqsut (July 30 and SAP meeting August 30, 2005)
- Point Lay (September 28, 2005)

FEX will continue to meet with the communities and the BLM Northwest NPR-A SAP to consult with the community members and accept their comments about the project. Quarterly (approximately) newsletters will be provided by mail to keep communities informed of the project activities and progress. Four newsletters have been delivered, with the next issue scheduled to mail in October 2006.

2.1.2 North Slope Borough

FEX consulted with NSB Executive Directors of the Planning, Wildlife, and Science departments and the Mayor for guidance on how to minimize project effects on subsistence (February 16, 2006). FEX provided data to the NSB Wildlife Department to assist with their efforts to track caribou movement during the recent winter operations. This type of data sharing is consistent with FEX's approach to exploration and their interest in receiving feedback from the local regulators.

2.1.3 AEW C

FEX consulted with the AEW C and the Nuiqsut, Kaktovik, Wainwright, and Pt. Hope Whaling Captain's Associations to develop a CAA for barging activities and worked with the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) to obtain an Incidental Harassment Authorization (IHA). In accordance with the CAA, North Slope Alaska Native MMOs were hired to escort the barges. A Communication Center (Com Center) based in Barrow and Deadhorse was in use by multiple industry companies to maintain communication between all marine vessels during the months of August and September, 2006. The MMOs maintained communication throughout barging activities via the Com Center and provided reports of observed marine mammals to the AEW C. FEX will also provide final reports to NMFS.

2.1.4 BLM SAP

FEX consulted with the Northwest NPR-A SAP and attended SAP workshops and meetings in Atkasuk, Barrow, Nuiqsut and Wainwright. FEX followed up on SAP recommendations to obtain traditional knowledge from NSB elder, Arnold Brower Sr. Mr. Brower accompanied the initial staking crew and provided traditional knowledge regarding the appropriate routing of ice road and location of ice pads.

2.1.5 UIC

UIC and FEX successfully worked together this past drilling season to develop the UIC Cape Simpson port and staging site. FEX used the site for staging their drilling and camp equipment during the non-exploratory drilling season months. UIC and LCMF (a UIC subsidiary) provided employees at the camps during the drill season and some will remain at the staging site during the summer barging months. UIC subsidiary WireCom also worked with FEX to provide communication services.

2.1.6 Federal and State Agencies

FEX consulted the U.S. Fish and Wildlife Service (USFWS) for issues related to polar bear, walrus, and birds. A bear interaction plan was prepared for the USFWS and the Alaska Department of Fish and Game (ADF&G). FEX will work with the USFWS and the ADF&G to avoid bear dens and other known bear locations. The project design includes strategies for food and food waste storage, hazardous material

handling and storage, pad layout, and lighting to minimize wildlife attraction. Project personnel will be instructed not to feed wildlife and to use proper food handling procedures.

2.2 Subsistence Conflicts and Reporting

The subsistence advisors will work to minimize subsistence conflicts. They will be present at the drill site locations and in the ice road vicinity. Two subsistence advisors will be employed during each drilling season. The subsistence advisors and MMO job descriptions are located in Attachment A and Attachment B respectively.

2.2.1 Subsistence Comment Recording

All comments, questions and concerns regarding the FEX project are welcomed. A toll-free comment line has been established to ensure North Slope residents have the ability to relay comments or questions on the FEX project in a convenient and timely manner. The telephone number is 1-888-FEX-5660 or 1-888-339-5660. The messages are checked daily and forwarded to the subsistence advisors or the appropriate project personnel for a quick response.

Self addressed, postage-paid comment cards are available in each of the villages; comments may be made by telephone, fax, and e-mail as frequently as may be required. Contact information is listed on all comment cards distributed at meetings and is available in the FEX Northwest NPR-A newsletters. A copy of the most recent newsletter, comment card, and television and radio advertisement are attached (Attachment C). Any conflicts regarding the FEX project should be addressed by calling the comment line; contact numbers are listed on the comment cards and newsletters.

Most comments, via comment cards, addressed whaling issues. There were no comments that addressed concerns regarding polar bear migration, availability, or awareness.

2.2.2 Local Employment

FEX has taken the initiative during their small exploration program to support local employment and training opportunities. The initiative began late last summer during the barging season when MMOs were employed to identify and document marine mammal activity. Inupiat Communicators (ICs) were also hired during the whaling season to monitor whaling and barging activities. FEX diversified the group by hiring from different villages closest to the project site. The MMOs and ICs included successful employment of individuals from Barrow and Nuiqsut.

Billy Adams and Jonah Leavitt from Barrow were selected from the MMO teams and received additional training to fill the role of subsistence advisors. These are full-time positions made possible because of the importance FEX places on aboriginal affairs and sustainable development. Jonah and Billy worked throughout the 2005/2006 drilling season as subsistence advisors on the project. They reported any subsistence concerns or conflicts, including any findings of dead animals, coordinated with subsistence users, and reported subsistence-related comments/concerns and information to the FEX Environmental Project Manager.

2.2.3 Visitors

Visitors in the area are required to make their presence known at the camp but are not allowed access to the drilling rig or flaring area where hazards exist. The subsistence advisor will be contacted to escort any visitor to share a cup of coffee and a meal. Due to limited space, overnight guests cannot be accommodated.

Employment opportunities are not available at the camp or drilling rig. Visitors looking for work must contact ASRC or UIC.

2.2.4 Safe Subsistence Activities

FEX will continue to develop information about conducting subsistence activities in the exploration area so that people are not endangered and equipment is not damaged. This information is distributed in newsletters, at public meetings, on the radio, and on signs printed in Inupiat and English.

2.2.5 Public Access

For public safety, access to the drilling location will be controlled. The well sites will be closed to the public. Government agency personnel should arrange visits through Michael Quick (907-339-6488) or Larry Burgess (907-339-6383).

Signs will be posted in Inupiat and English which will inform the public: "Restricted Access; Air Quality Exclusion Zone; Authorized Personnel Only; Please Check in with Drilling Manager". The signs will be placed on each side of the pad at the ambient air boundary.

An FEX representative will be available during operations. Phone service will be available at the drilling camp 24 hours a day. The following table lists personnel contacts.

TABLE 2.2.5-1
FEX L.P. Personnel Contacts

| Name | Title | Company | Phone | Home |
|-----------------|---------------------------------|----------|----------------|----------------|
| Robin LaPlace | Drilling Manager | FEX L.P. | (907) 339-7634 | (907) 382-1622 |
| Ramsey Koslandi | International Drilling Director | FEX L.P. | (403) 237-1299 | (403) 860-1224 |
| Leslie Zilm | Environmental Compliance | FEX L.P. | (403) 237-4866 | (403) 606-7877 |
| Mike Quick | Engineering Team Lead | ASRC | (907) 339-6488 | (907) 622-1272 |
| Tim Flynn | Drilling Engineer | ASRC | (907) 339-6271 | (907) 222-1993 |
| Larry Burgess | Health, Safety, Environment | ASRC | (907) 339-6383 | (907) 952-0064 |
| Darrin Lawless | Environmental Compliance | ASRC | (907) 339-5483 | (907) 344-1273 |
| TBA | Field Drilling | | | |
| TBA | Supervisors | | | |

ASRC = Arctic Slope Regional Corporation
TBA = To be announced

Security coverage is maintained in Anchorage 24 hours a day. Personnel on duty are trained to handle incoming emergency calls. The security telephone number is (907) 339-5483.

2.2.6 Employee Training

All project personnel will be trained to be aware of and sensitive to the Native cultural values held by residents of the North Slope. The training will include information concerning applicable project stipulations; required operating procedures and standards; and specific environmental, social, traditional and cultural concerns for the region.

Personnel will be trained to avoid disturbing archaeological and biological resources and habitats including endangered species, fisheries, bird colonies, and marine mammals. Dr. Richard Reanier conducted cultural clearance during summers of 2005 and 2006 to ensure cultural sites are not disturbed.

Unless they are invited, project personnel will be restricted from entering camps, cabins or allotments. All project personnel will be provided information concerning avoiding conflicts with subsistence, commercial fishing activities and pertinent mitigation.

2.2.7 Aircraft

Ice airstrips will be used by large aircraft, such as a Hercules, and other smaller aircraft to transport project components and project personnel. Personnel associated with aircraft use will be provided information concerning subsistence activities, areas, and seasons that are sensitive to aircraft noise, especially near traditional subsistence cabins and campsites. Aircraft use, especially helicopters, will be coordinated to minimize the numbers of trips. Aircraft use will be limited to avoid the caribou study area during December 1 through May 1, June 15 through July 31, and coastal caribou insect relief areas during June 15-July 31.

2.2.8 FEX Local Contract Opportunities

FEX strives to include local, regional and village corporations and their subsidiaries on bid lists for contract opportunities. ASRC Energy Services, UIC (Bowhead and LCMF), Kuukpik Arctic Catering, KuukpikVeritas, and Agviq were contracted for services during the exploration phase of this project. The NSB and UIC also worked with FEX to lease space and stage equipment for the project at Cape Simpson. FEX hopes to continue this initiative to further employment and contract opportunities throughout the remainder of their exploration project on the slope.

2.2.9 Public Information

FEX will keep the village residents informed of the project activities with public service announcements over radio and television, newsletters, public and individual meetings, with the assistance of ICAS village liaisons and through the local Native subsistence advisor or liaisons.

FEX intends to prevent subsistence conflicts during construction and drilling through local-hire on-site subsistence advisors. The advisor duties include communications to ensure the comments and consultations process is effective and subsistence hunting is not adversely affected.

FEX will monitor and record the project-related potential effects on subsistence activities and will provide biannual reports to BLM and the NPR-A SAP.

The 2006-2007 winter oil and gas exploration project is temporary and does not include seismic activities except for vertical seismic profiling at the well site. Neither development activities nor production activities are part of this exploration drilling project.

3.0 CONCLUSION

The following resolutions were reached during this consultation process:

- Specific AEWC CAA signed.
- Continued consultation occurred.
 - The project activities, combined with other potential activities in the area, will continue to be scheduled and located to prevent unreasonable conflicts with subsistence activities.
 - FEX will keep the communities informed of project activities at least weekly and more frequently for unusual occurrences.
 - FEX will continue to visit the villages and attend meetings for consultations and comments as the project progresses.

- Multiple or simultaneous operations assessed.
 - Exploration and delineation well drilling activities that can be expected to occur during operations will be assessed for any potential cumulative effects on subsistence resources and subsistence hunting.
- The subsistence advisors will be consulted for community or individual comments or concerns. The advisors will report the comment or concerns to the Environmental Project Manager for resolution.
- FEX will provide copies of the exploration plan of operations and the oil-spill-contingency plan to the potentially affected communities of Atqasuk, Barrow, Nuiqsut, Point Lay, Wainwright, and the NSB to facilitate concurrent review and commenting process.

Attachment A - Subsistence Advisor Trainee Job Description

**Subsistence Advisor Trainee
FEX L.P. Northwest NPR-A
Winter Exploration Drilling Project**

JOB DESCRIPTION

The Subsistence Advisor (SA) is a full time non-exempt position with AES Lynx Enterprises, Inc. (Lynx).

Job Responsibilities and Qualification

The SA will work under direct supervision of the Environmental Project Manager. The SA will be required to work 12-hour days, 7 days per week, with 7 days off between shifts (week on, week off) and be on-call 24 hours per day while on shift.

The SA will utilize local knowledge (Traditional Knowledge) to observe and identify subsistence use by local residence. These observations and interpretations of the observations will be documented and provided to the Environmental Project Manager on a weekly basis.

The SA will accept subsistence related comments/concerns and relay the information to the Environmental Project Manager on a weekly basis. The SA will ensure that the ice road is clear of FEX industrial debris. Any critical subsistence concerns will be forwarded to the Environmental Project Manager as soon as practicable.

Working Conditions

The work will be indoors and outdoors. Extreme arctic weather conditions are routine. The SA may be required to commute long distances by boat rolligon/ATV, and or aircraft including helicopters. The SA must be flexible and adaptable to different environments, job assignments, and requirements.

IM Hiring Requirements

- Must be in good physical condition.
- Be at least 18 years old
- Have a current drivers license or equivalent state photo ID card
- Social security number

The above job responsibilities of the SA are conducted to comply with regulatory permits, authorizations, and agreements to ensure FEX's ability to operate in Alaska.

Attachment B - Marine Mammal Observer Job Description

**Marine Mammal Observer
FEX L.P. Northwest NPR-A
Winter Exploration Drilling**

JOB DESCRIPTION

The Marine Mammal Observer (MMO) will serve aboard Bowhead barges that will transport winter exploration components required for the FEX L.P. (FEX) project in the Northwest NPR-A.

The Bowhead barges will accompany Crowley Marine barges from West Dock to Cape Simpson. The MMO will perform marine mammal observation duties under the supervision of the lead Marine Mammal Biologist (MMB). The MMO duties are outlined below.

The MMO is a temporary position with ASRC Energy Services Lynx Enterprises, Inc. (Lynx). The anticipated period of employment will be mid-July through August 30, 2005 but may vary depending on sea conditions. The MMO (depending on experience) will be required to successfully complete the following training after hire:

- Marine mammal monitoring procedures training by the marine mammal biologist,
- Environmental Health & Safety (EHS) training,
- Barge orientation,
- Environmental orientation,
- Other training that may be necessary.

The MMO may also be trained by the North Slope Borough Wildlife Department. Employees will be paid for training time.

Job Responsibilities and Qualification

The MMO will work under direct supervision of the lead MMB and will be required to work extended hours, usually 12-hour days, 7 days per week. The MMO will have 7 days off between shifts (week on, week off) and must be on-call 24 hours per day while on shift.

The MMO will use local knowledge (Traditional Knowledge) to monitor and record sightings and to assist the MMB. The MMO will operate various distance-measuring devices including reticule binoculars and inclinometers. The MMO must have the knowledge and ability to distinguish seal species, (ringed, spotted, and bearded seals).

The MMO will scan the immediate vicinity around the barge for the presence of marine mammals and provide verbal and written descriptions of the marine mammal sightings as required by the lead MMB.

Working Conditions

Outdoor work on deck is weather dependent. Safety is the first priority. Extreme arctic weather conditions are routine. The MMO may work 12 hours per day and is on-call for 24 hours. The MMO may be required to commute long distances by boat rolligon/ATV, and/or aircraft including helicopters. The MMO must be flexible and adaptable to different environments, job assignments, and requirements.

MMO Hiring Requirements

- Must be in good physical condition and able to climb and descend stairs.
- Be at least 18 years old
- Have a current drivers license or equivalent state photo ID card
- Must pass a pre-hire drug and alcohol test and adhere to the FEX L.P. Drug and Alcohol Policy
- Must provide a Social Security Number

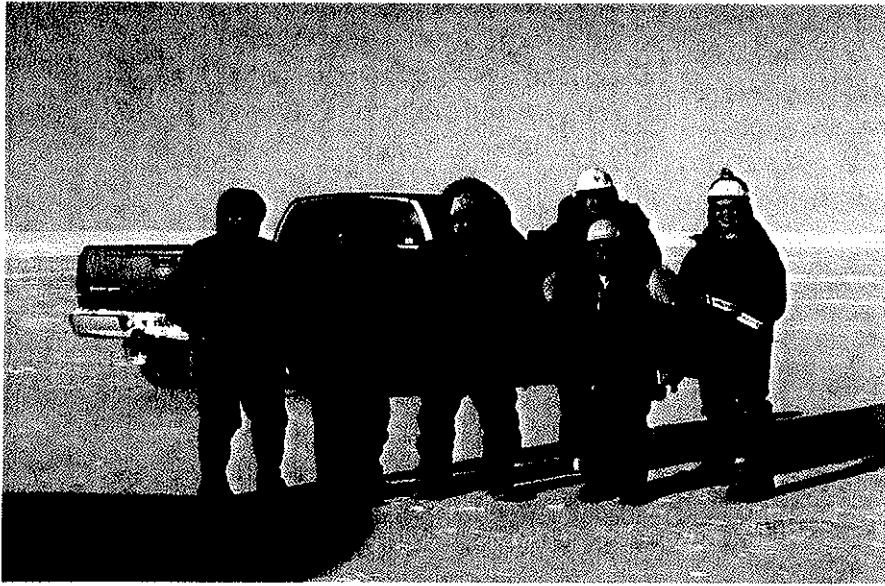
The MMO job responsibilities are required to comply with regulatory permits, authorizations, and agreements to ensure FEX L.P. ability to operate in Alaska.

Attachment C – Newsletter, Comment Card, Television and Radio Advertisements

FEX L.P.

OIL & GAS EXPLORATION
IN NORTHWEST NPR-A

SITE VISIT TO AKLAQ #2



James Aiken, Marchie Nageak, Ned Arey, Beverly Long (front), Dr. Noah Owen-Ashley, and Todd Williams

On March 21, 2006 seven North Slope Residents traveled to the Aklaq #2 drill site with FEX Subsistence Advisor Billy Adams. The purpose of the site visit was to allow local cabin, camp, and allotment owners to see the drilling operations and facilities first hand. The visitors included: Jonathan Aiken Sr., Arnold Brower Sr., Beverly Long, Marchie Nageak, Ned Arey Sr., Dr. Noah Owen-Ashley (NSB Wildlife Department Scientist) of Barrow and James Aiken Sr. of Atkasuk. During the visit the residents were given a tour of the facilities and ice roads/trails and given the opportunity to share any questions or concerns that might have developed during their visit.

PROJECT UPDATE AND SUMMER PLANS

Winter exploration drilling began at Aklaq #2 on February 2nd and ended for the season on April 10th. The drill rig, camps, and equipment have been demobilized back to Cape Simpson for staging until the next winter drill season commences.

Summer plans for FEX include stick picking, summer studies and barging activities. Stick picking efforts will occur at former camps, ice roads, trails, ice pads and air strip locations to ensure these areas are cleared of any debris that may have been left behind. Summer studies will be conducted to examine lake, fish and cultural resources.

Barging is scheduled to begin during the month of July or when sea conditions permit travel from West Dock to Cape Simpson for re-supply of drilling equipment and material. FEX will be entering into another Conflict Avoidance Agreement (CAA) with the Alaska Eskimo Whaling Commission (AEWC) for their 2006 barging activities.

Community information meetings are also being planned for the summer months. FEX subsistence advisors Billy Adams and Jonah Leavitt will travel to North Slope villages to discuss the project and provide current updates and plans for upcoming activities. In addition, FEX will be hosting community open houses in Barrow and Atkasuk the last week of June. Next year's exploration project site map can be viewed on page 3.



FEX LOCAL EMPLOYMENT

FEX has taken several initiatives during their small exploration program to support local employment and training opportunities. The initiative began late last summer during the barging season when Marine Mammal Observers (MMO's) were employed to identify and document marine mammal activity. Inupiat Communicators were also hired during the whaling season to monitor whaling and barging activities. FEX diversified the group by hiring from different villages closest to the project site. The MMO's and Inupiat Communicators included Billy Adams, George Leavitt, Luther Leavitt, Jr., Jonah Leavitt and Gary Panigeo of Barrow and Mark Ahmakak and Cyrus Ahtuanguak of Nuiqsut.

Billy Adams and Jonah Leavitt were selected from the MMO's and received additional training to fill the role of Subsistence Advisor/Field Environmental Liaison Coordinators (SA/FELC). These are full time ASRC



Waska Williams, Jonah Leavitt, Gordon Brower, Arnold Brower, Sr., and Dave Logan.

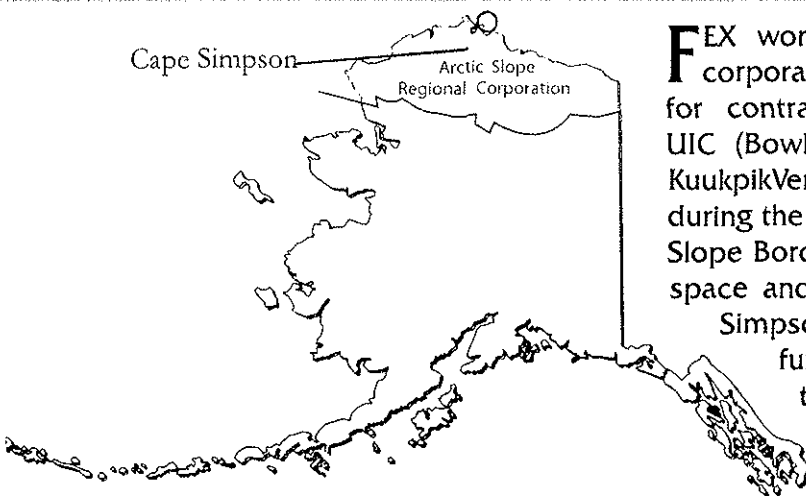
Energy Services' positions made possible by FEX's exploration activities and the importance placed on aboriginal affairs and sustainable development. Jonah and Billy have worked throughout the winter as liaisons on the project with subsistence users and have collected subsistence-

related comments/concerns and passed on information to the Environmental Project Manager. With the training and experience Mr. Adams and Mr. Leavitt receive it's intended that they will continue on the project next season.

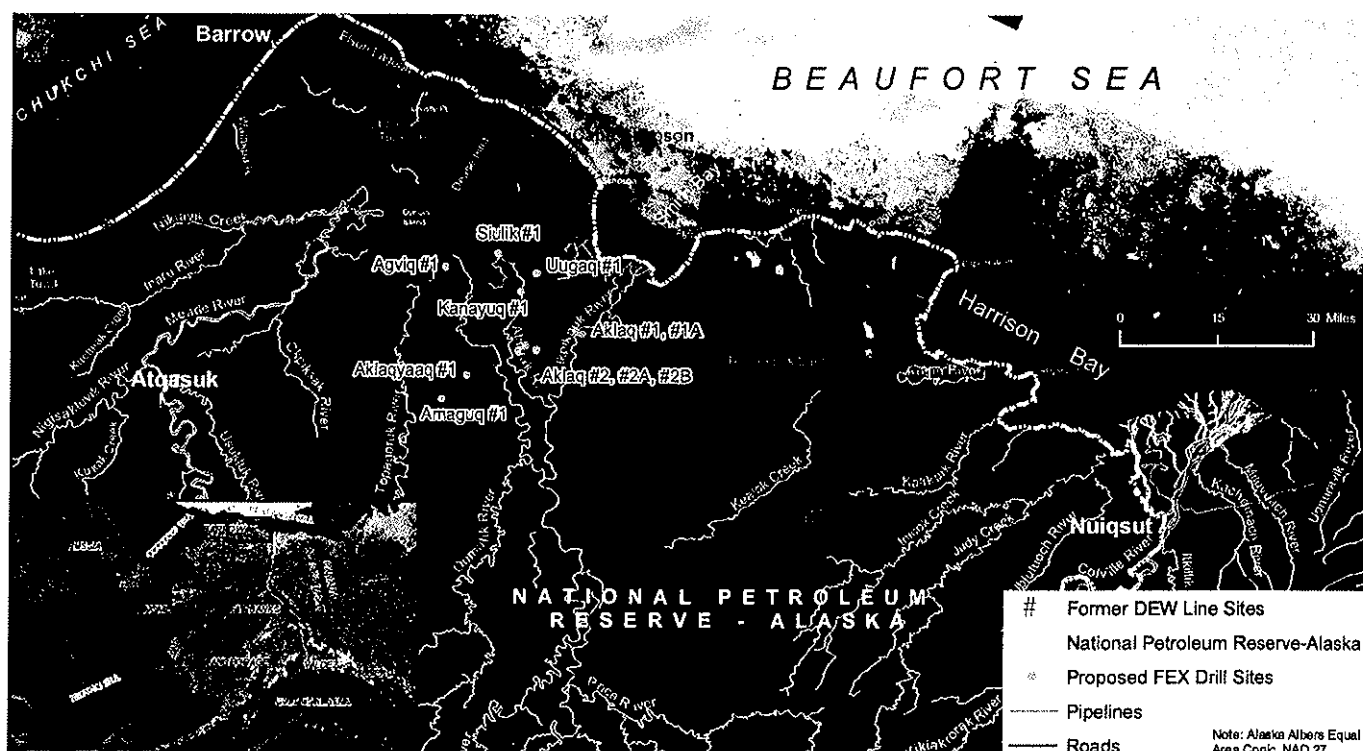
FEX LOCAL CONTRACT OPPORTUNITIES

Cape Simpson
Arctic Slope
Regional Corporation

FEX works to include local, regional and village corporations and their subsidiaries on bid lists for contract opportunities. ASRC Energy Services, UIC (Bowhead and LCMF), Kuukpik Arctic Catering, KuukpikVeritas and Agviq were contracted for services during the exploration phase of this project. The North Slope Borough and UIC also worked with FEX to lease space and stage equipment for the project at Cape Simpson. FEX hopes to continue this initiative to further employment and contract opportunities throughout the remainder of their exploration project on the slope.



PROJECT & SITE MAP (UPDATES & SUMMER PLANS ARTICLE Pg. 1)

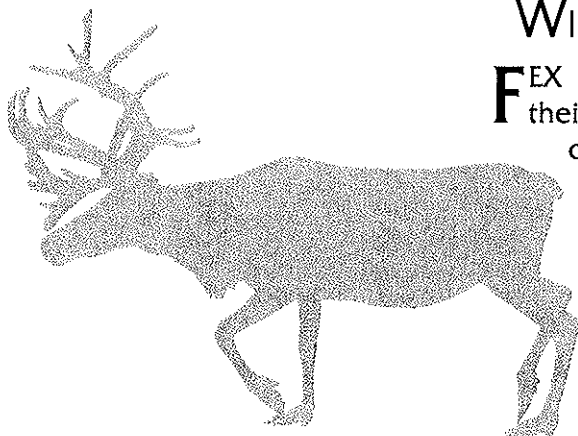


1-888-FEX-5660

A toll-free comment line has been established to ensure North Slope residents the ability to relay comments or questions on the FEX Project in a convenient and timely manner. The number is 1-888-FEX-5660 or 1-888-339-5660. The messages are checked daily and forwarded to the subsistence advisors or the appropriate project personnel for a quick response. Please feel free to call if you have any comments or questions.



FEX AND THE NORTH SLOPE BOROUGH (NSB) WILDLIFE DEPARTMENT DATA SHARING



FEX has provided data to the NSB Wildlife Department to aid their efforts to track caribou movement during our recent winter operations based on the NSB's practice to support responsible oil and gas exploration. This type of data sharing is consistent with FEX's interest to be transparent with our exploration activity and get feedback from the local regulators. We look forward to continued opportunities to work together.

Quyanaqpak!

Thank you very much to all the communities for their cooperation this past season with FEX.

UIC & FEX A JOINT SUCCESS



UIC and FEX have successfully worked together this past drilling season to develop the UIC Cape Simpson port and staging site. FEX used the site for staging their drilling and camp equipment during the non-exploratory drilling season months.

In addition, UIC and LCMF (a UIC subsidiary) provided employees at the camps during the drill season and some will remain at the staging site during the summer barging months. UIC subsidiary WireComm also worked with FEX to provide communication services. FEX looks forward to a continued successful working relationship with UIC.



FEX L.P.
Suite 3400, 888-3rd Street SW
Calgary, Alberta T2P 3C5
Canada

PRSRT STD
U.S. Postage
PAID
Permit No. 69
Anchorage, AK



AES Lynx Enterprises, Inc.
Attn: FEX Project
3900 C Street, Suite 601
Anchorage, AK 99503

FEX L.P. Northwest NPR-A Exploration Project
Thank you for submitting a comment or question



FEX

Toll-Free Comment Line 1-888-FEX-5660
(1-888-339-5660)

Paglagivsi! FEX is currently conducting exploratory drilling about 50 miles south of Barrow at the Aklaq #2 drill site. Individuals wishing to provide any environmental, social or subsistence related comments or questions are encouraged to call. FEX has established a toll-free message line to make it easier for people to share their comments. Quyanapqak.

FOR TV and RADIO ADVERTISEMENT

FEX L.P. Comment Line

1-888-FEX-5660

Paglagivsi! (Greeting.) FEX L.P. is currently conducting exploratory drilling about 50 miles south of Barrow at the Aklaq #2 drill-site. Individuals wishing to provide any environmental, social or subsistence related comments or questions are encouraged to call 1-888 FEX 5660 (1-888 339 5660). FEX L.P. has established a toll-free message line to make it easier for people share their comments. Quyanapqak.

Toll-free Message Recording

Greetings you have reached the FEX toll-free message line for receiving your important concerns or comments. Please leave your name, phone number, and comment. We will get back to you in a timely manner. If this is an emergency, please hang up and call 911. Thank you for your interest in the FEX Aklaq project.

(This message will be in English and in Inupiat and recorded by one of our Subsistence Advisors.)